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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/511,121	03/28/2005	Nicholas D Spencer	ETH 110	8769
23579 7590 01/09/2008 PATREA L. PABST PABST PATENT GROUP LLP 400 COLONY SQUARE, SUITE 1200 1201 PEACHTREE STREET ATLANTA, GA 30361			EXAMINER MULLIS, JEFFREY C	
			ART UNIT 1796	PAPER NUMBER
			MAIL DATE 01/09/2008	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/511,121

Applicant(s)

SPENCER ET AL.

Examiner

Jeffrey C. Mullis

Art Unit

1796

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 October 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14, 16-18 and 21-25 is/are pending in the application.
- 4a) Of the above claim(s) 4, 7, 11, 13, 14 and 22-25 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 5, 6, 8-10, 12, 16-18 and 21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Newly added claims 22-25 recite nonelected side chains and therefore these claims are withdrawn s being drawn to a non elected species.

All remaining rejections follow.

Claims 1-3, 5, 6, 8-10, 12, 16-18 and 21 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The term "non-interactive" is defined by applicants specification as meaning that no polymer interaction occurs with the metal surface. However it is unclear what is intended when a metal surface is not required to be present in the first place. The phrase "do not interact" does not clarify what is meant since any two materials in intimate contact with each other will always interact with each other by means of such forces as Van der Waals forces. Note Yang at paragraph 29 and Waldman at the caption to Figure 5 in this re. Applicants remarks indicating that by interact something is intended other than that which is always encountered when 2 materials are in contact is therefore unclear.

Claims 12-14 and 17-18 are unclear in that they recite sliding surfaces despite the fact that applicants are claiming a product, not a process and as such, applicants' process steps make no sense.

The term "brush" polymer as used in the art generally refers to a type of graft copolymer encompassing those graft copolymers with a high density of grafts on the backbone and applicants paragraph 36 of their published application appears to concur

with this definition. However, the term "dense" as Appears in applicants paragraph 36 is subjective and unclear and consequently so is the term "brush" even though admittedly used in the art.

The structure of applicants "block" copolymers is unclear in that "A" is said to form side chains on poly"B" which would appear to be a graft, not block copolymer as these terms are used in the art. Furthermore it is not clear why "A" is shown between "B" in the structures if sequences of "A" side chains.

Block copolymers as are now present in the claims are not generally described as graft polymers and the description of graft polymers as including block copolymers is therefore unclear.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1,5, 8-10, 12 and 21 are rejected under 35 U.S.C. 102(a) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Toshiaki (JP 2002-060772).

Patentees disclose a friction reducing resin coating (patent claim 1) containing a comb polymer having a backbone of methacrylic acid and side chains of methoxypolyethylene glycol (paragraph 69). Note the examples where these materials are used to coat stainless steel pipes etc which are pounded into the ground, a process in which the coating would be between the pipe (in that it was applied to the pipe) and a surface comprising earth (in that the pipe is pounded into the earth and is therefore in contact with the earth). Note the first paragraph on page 8 of applicants specification disclosing that steel surface acquires a charge naturally depending on pH and that trend toward low pH results in more cationization while higher pH will eventually result in formation of anionic surface where this is possible. As the comb polymer coating contains carboxyl groups it would be at least slightly anionic due to ionization of carboxyl, while the surface of the pipe would be exposed to the acidic comb polymer it would be in an acidic environment and therefore would be in cationic form. Furthermore both applicants coatings and patentees explicitly have friction reducing characteristics and for this reason also it would appear that they function the same way.

When the reference discloses all the limitations of a claim except a property or function, and the Examiner cannot determine whether or not the reference inherently possesses properties which anticipate or render obvious the claimed invention, basis exists for shifting the burden of proof to applicant. Note In re Fitzgerald et al. 619 F. 2d 67, 70, 205 USPQ 594, 596, (CCPA 1980). See MPEP § 2112-2112.02.

Claims 1, 5, 12 and 21 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Murata et al. (US 5,726,230). Patent claim 1 discloses "a graft reaction product" of an epoxy resin and an acrylic resin containing acrylic acids reacted therein and which would be expected to be acidic due to presence of said acrylic residues. Note column 13, lines 10-45 where these materials are coated on aluminum plates and friction against steel ball surfaces reduced as a result. Again, note applicants specification at the first paragraph on page 8 disclosing that even at neutral pH, Al surface is already positively charged. As the acrylic graft would be negatively charged due to ionization (or reaction with the Al plate), the characteristics of the claims re a charged surface would reasonably appear to be inherent.

When the reference discloses all the limitations of a claim except a property or function, and the Examiner cannot determine whether or not the reference inherently possesses properties which anticipate or render obvious the claimed invention, basis exists for shifting the burden of proof to applicant. Note In re Fitzgerald et al. 619 F. 2d 67, 70, 205 USPQ 594, 596, (CCPA 1980). See MPEP § 2112-2112.02.

Claims 1-3, 5, 6, 8-9, 12, 16-18 and 21 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Hubbell et al. (US 2003/0087111).

Patentees disclose a graft copolymer having a polylysine backbone and PEG side chains (a moiety having a hydroxyl functional group at the end) is deposited on a silicon dioxide surface as an aqueous solution. Note Example 4 and paragraph 129 and claim 29 disclosing polylysine as being polycationic. With re to applicants lubricating characteristic, even water (as is present in Hubbells' graft copolymer composition) is known to act as a lubricant (see for instance the last complete paragraph of the first column on page 143 of applicants Hollinger reference and the paragraph bridging columns 243 and 244 of Xiong) and Hubbells aqueous graft copolymer composition therefore reasonably appear to have lubricating properties even aside from the fact that applicants and Hubbells materials are graft copolymers with amine backbones and PEG side chains.

When the reference discloses all the limitations of a claim except a property or function, and the Examiner cannot determine whether or not the reference inherently possesses properties which anticipate or render obvious the claimed invention, basis exists for shifting the burden of proof to applicant. Note In re Fitzgerald et al. 619 F. 2d 67, 70, 205 USPQ 594, 596, (CCPA 1980). See MPEP § 2112-2112.02.

Claims 9 and 10 rejected under 35 U.S.C. 103(a) as being unpatentable over Hubbell et al., cited above in view of Singh et al. (US 20010049105).

Hubbell do not disclose that biotin may be attached to the ends of their polymer but does disclose that bioactive species such as receptor ligands may be (paragraphs 55 and 56).

Singh et al. disclose that biotin may be used as a receptor ligand in paragraphs 38 and 161.

It would have been obvious to a practitioner having an ordinary skill in the art at the time of the invention to attach biotin to the ends of the graft copolymer of the primary reference as taught by the secondary reference motivated to achieve the goal of the primary reference of a graft polymer with a receptor ligand at the ends thereof and by the disclosure of the secondary reference that biotin would fulfill the requirements as a receptor ligand as desired by the primary reference absent any showing of surprising or unexpected results.

Claims 12, 17, 18 and 21 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Textor et al. (WO 00/65352), cited by applicants.

Patentees disclose "polyionic" "brush copolymers" for adsorption to surfaces (Abstract). Note the first paragraph on page 9 where it is disclosed that the backbones have a charge opposite of the substrates they are in contact with and that the side chains are non interactive. Note that the first paragraph on page 12 for use of polyethyleneimine backbones. Note page 16, lines 5-14 where it is disclosed that ligands are introduced at

the ends of the PEG side chains. Note page 36, lines 1-16 for use of negatively charged metal substrates.

When the reference discloses all the limitations of a claim except a property or function, and the Examiner cannot determine whether or not the reference inherently possesses properties which anticipate or render obvious the claimed invention, basis exists for shifting the burden of proof to applicant. Note In re Fitzgerald et al. 619 F. 2d 67, 70, 205 USPQ 594, 596, (CCPA 1980). See MPEP § 2112-2112.02.

Claims 1, 5, 8-10, 12 and 21 are rejected under 35 U.S.C. 102(e or b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Higai. The cover of the US patent indicates that the patents 102(e) date is 6-14-2000 and provides hearsay evidence that the disclosure was published on 4-20-2000 as WO00/22058 and therefore the contents of the US patent was published more than 1 year from applicants US filing date.

Patentees disclose a lubricated metal sheet (title) and discloses numerous examples (for instance 94-105 in Table 11-1 in columns 29 and 30) of comb polymers with polyethylene oxide side chains modified by etherification and a backbone containing (meth)acrylic acids (i.e. anionic units). Note that a wide variety of metals including aluminum treated with alkaline rinsing (column 14, line 65) and steel in which rust (oxidation) was induced (column 16 line 45-50) and it therefore reasonably appears that at least some of the metal substrates contained ionic groups.

When the reference discloses all the limitations of a claim except a property or function, and the Examiner cannot determine whether or not the reference inherently possesses

properties which anticipate or render obvious the claimed invention, basis exists for shifting the burden of proof to applicant. Note In re Fitzgerald et al. 619 F. 2d 67, 70, 205 USPQ 594, 596, (CCPA 1980). See MPEP § 2112-2112.02.

Applicant's arguments filed 10-16-07 have been fully considered but they are not persuasive.

With re to the rejections under 35 USC 112, second paragraph, the examiner's position re "interactive" is set out above Polyethylene glycol is a specific material with specific characteristics and any characteristic recited pertaining solely to PEG in most cases (except those which are a function of molecular weight which is variable) would therefore be clear. Unfortunately the characteristic of "non-interactive" also pertain to a surface which is not narrowly defined and applicants characteristic is still therefore unclear.

With re to the issue of "sliding surfaces" the examiner admits that applicants are claiming a product in claim 12. However, an action, not related to the product (such as a process of making the product) can't be said to have any relationship to the product.

With re to applicants arguments as pertain to alleged distinctions of the claims over the prior art, for the reasons set out above in the rejection under 35 USC 112, second paragraph, applicants newly added limitations re their "graft" copolymer are unclear and do not substantially narrow the meaning of the term "graft" as was

previously present and may actually broaden it as block copolymers as are now present in the claims are not generally described as graft polymers. In any case the structures recited by the claims would apply to virtually any graft copolymer given that materials with 3 and 5 units are generally not even described in the art as polymers and given that the only other structure recited is that side chains are present on a backbone, a feature of all graft copolymers. With re to applicants arguments which appear to pertain to "sliding surfaces", limitations from the preamble are given little weight and in fact applicants "method" is merely recited by the claims to encompass "administering". With re to claim 12, a simple machine is a lever and virtually any remotely stiff object can be used as such. The term "device" is even less limiting.

With re to Toshiaki, no human translation is available and the Office is not required to supply a translation at all except on appeal in which case it is not clear that a machine translation would not encompass the term "translation" as required by the MPEP. Swelling in water is not precluded by the claims. Toshiaka refers to "pH" an aqueous phenomenon and in any case the materials of patentees are fairly polar and would be expected to absorb water. The pipe of Toshiaka, as with any pipe has an inner and outer surface. Toshiakas' material is pounded in the ground and thus slides into the ground and in any case applicants limitation re sliding has little bearing on patentability as set out above. A pipe is a device for transporting liquids.

With re to Murata, Example 1 reacts a carboxyl containing acrylic resin and an epoxy resin and thus the carboxyl groups of the acrylic backbone would react with the epoxy groups of the epoxy resin and thus the backbone of polyacrylic would result. As

no chemical reaction is 100% efficient some (anionic) carboxyl would be expected to remain. A can has two surfaces, one inner and one outer surface.

Applicants specification discloses that their material also has low adhesion but in any case the material limitations of the claimed product are the same as applicants' and therefore identical characteristics are assumed inherent in Trextor as well as all of the art relied upon. In any case the fact that both the product of the instant claims and a number of the references relied upon disclose reduced adhesion is further proof of the similarity of the claimed materials and those of the prior art.

With re to Trextor the instant claims do no preclude prevention of adsorption nor is there any reason to think that such a characteristic would preclude the achievement of applicants characteristics.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not

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mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication should be directed to Jeffrey C.

Mullis, M-F, 9-5 pm at telephone number 571 272 1075.

JCM

1-5-08

Jeffrey C. Mullis
J Mullis
Art Unit 1796

A handwritten signature in black ink, appearing to be 'JCM', with a large, stylized loop at the bottom.